

AMENDMENTS TO THE CLAIMS

1-7. (Previously Canceled)

8. (Previously Presented) A method for constructing a scalable computer system, the method comprising:

providing a first plurality of computing nodes, and a second plurality of switching nodes, said first plurality being more numerous than said second plurality;

forming a plurality of node clusters, each node cluster comprising one of said switching nodes interconnecting a corresponding group of said computing nodes;

providing a plurality of cross-links between the node clusters;

directly connecting, using the plurality of cross-links, a corresponding plurality of pairs of node clusters selected from the plurality of node clusters in accordance with a selection process resulting in a formation of a network of said plurality of computing nodes having a higher clustering coefficient of nodes in comparison with a corresponding randomly-connected network in combination with a lower characteristic path length between the nodes in comparison with a corresponding regularly-connected network; and

wherein the steps of providing the plurality of cross-links and directly connecting the plurality of pairs of node clusters in accordance with said selection process are repeated until the resulting network comprises a small-world network having an average path length between the plurality of nodes falling within a predetermined desired range, independently of a number of said plurality of computing nodes.

9. (Previously Presented) The method of claim 8, wherein said selection process is a random or pseudo-random process.

10. (Previously Canceled)

11. (Previously Presented) The method of claim 8, wherein said predetermined range of the average path length between the plurality of nodes is less than 2.0.

12. (Previously Presented) The method of claim 11, wherein said predetermined range of the average path length between the plurality of nodes is between 1.5 and 1.7.

13. (Previously Presented) A scalable computer system constructed in accordance with the method of claim 8.

14-18. (Previously Canceled)

19. (Previously Presented) A scalable computer system comprising:

a plurality of node clusters, each said node cluster comprising a plurality of computing nodes which are interconnected via a common switch; and

a plurality of cross-links directly connecting a corresponding plurality of pairs of node clusters selected from the plurality of node clusters,

wherein the cross-links are disposed such that the pairs of node clusters form a network of said plurality of computing nodes which has a higher clustering coefficient of nodes in comparison with a corresponding randomly-connected network, in combination with a lower characteristic path length between the nodes in comparison with a corresponding regularly connected network, and

wherein said network comprises a small-world network having an average path length between the nodes falling within a predetermined desired range, independently of a number of said plurality of computing nodes.

20. (Previously Presented) The system of claim 19 wherein each said switching node comprises a non-blocking switch.

21. (Previously Presented) The system of claim 20 wherein each said non-blocking switch comprises a multi-wavelength optical switch.

22. (Previously Presented) The system of claim 19 wherein the pairs of node clusters are randomly, or pseudo-randomly selected.

23. (Previously Presented) The system of claim 19 wherein said predetermined range of the average path length between the plurality of nodes is less than 2.0.

24. (Previously Presented) The system of claim 19 wherein said predetermined range of the average path length between the plurality of nodes is between 1.5 and 1.7.

25. (Previously Presented) The system of claims 19 wherein each computing node of said plurality of computing nodes comprises a plurality of interconnected processors.